CAPACITY ASSESSMENT Earthquake Unit, Mona, Jamaica

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LIST OF ACRONYMS

CDEMA	Caribbean Disaster Emergency Management Agency
CRS	Central Recording Station
CTBTO	Comprehensive Nuclear Testing Ban Treaty Organization
EQU	Earthquake Unit
GOJ	Government of Jamaica
GPS	Global Positioning System
IDB	International Development Bank
IDC	International Data Centre
JSN	Jamaica Seismograph Network
JSMN	Jamaica Strong Motion Network
KSAC	Kingston and St. Andrew Corporation
LICJ	Land Information Council Jamaica
MLSS	Ministry of Labour and Social Security
MOU	Memorandum of Understanding
NDC	National Data Centre
NGO	Non-Governmental Organization
NMIA	Norman Manley International Airport
NWA	National Works Agency
ODPEM	Office of Disaster Preparedness and Emergency Management
PMAS	Performance Monitoring and Appraisal System
SWOT	Strength, Weakness, Opportunities, Threats
UTech	University of Technology
UWI	University of the West Indies

1 INTRODUCTION

The core function of the Earthquake Unit (EQU) is research. As a department of the University of the West Indies, it is funded by the Government of Jamaica (GOJ) and is part of the Department of Geology and Geography in the Faculty of Pure and Applied Sciences.

The EQU is the sole agency responsible for the monitoring of earthquakes and seismic hazards assessment in Jamaica. The EQU operates The Jamaica Seismograph Network (JSN) which is a network of 12 analog short period seismograph stations installed across the island (see figure 1). The data from the JSN station is transmitted to the Central Recording Station (CRS) at UWI-Mona in real time using radio signal. The data is recorded on computers running data acquisition and processing software.

The EQU also operates the Jamaica Strong Motion Network which is a network of eight (8) accelerographs installed across the island to record ground shaking for larger earthquakes. These instruments operate in a standby mode and start recording when triggered by an earthquake. They provide very important data to be used in seismic hazard assessment, studying the response of sites to ground shaking and provide parameters to be used in constructing or retrofitting important structures. Another area of operation is the GPS network which has over 36 points across the island to monitor fault movement or strain accumulation over time.

This report presents the findings from the Capacity Assessment of the Earthquake Unit conducted April 2013. An analysis of the findings is provided and a capacity strengthening strategy and monitoring and evaluation strategy proposed to improve the functions of the EQU in assessing earthquake risk at the national and local level.

2 OBJECTIVES

- To identify current internal capacity of the Earthquake Unit (EQU)
- To assess sustainability factors that influence the existing capacity of the Unit
- To assess key stakeholder partnerships and external capacity of the EQU
- To assess capacity to plan, manage and implement projects and programmees
- To propose a Capacity Strengthening Strategy to promote business continuity
- To propose a monitoring and evaluation strategy that can serve to enhance functions of the Unit

3 METHODOLOGY

3.1 Screening:

Desktop Research conducted to acquire background information on the Earthquake Unit.

- Reviewed articles written about the work being done by the Earthquake Unit.
- Reviewed Earthquake Unit Annual Report
- Reviewed collaborative work being done with the ODPEM and other agency stakeholders
- Field Reconnaissance - Visitation to the office of the Earthquake Unit. Observations made of the existing working environment (spatial layout, staff relations, storage of equipment and documentation of records).
    - Conducted interviews with technical staff regarding data collection, analyses and interrelationships within the Unit.
    - Conducted interview with the Unit Head
    - Photographs taken of spatial layout, equipment and electronic and hardcopy data

3.2 Scoping/Capacity Assessment:

Situation Analysis - A SWOT Analysis was also done to identify the capacity issues and an assessment made of the sustainability factors that directly or indirectly influence the capacity of the Earthquake Unit. The variables of capacity was categorized and assessed as follows:

i. ***Identity and Governance*** - Assessment of the Unit's structure, work ethics (including culture), reputation, mission and values

ii. ***Strategy and Planning*** - An assessment of how the Unit achieves its broad long-term objectives and the effectiveness of its Strategic and Operational Plans. The overall planning process and monitoring mechanisms were also assessed.

iii. ***Management and Reporting*** - An assessment of how the Unit supports the continuous improvement of individuals and organizations to provide better goods and services for the stakeholders they serve. Change management, risk management, staff relationships and reporting mechanisms uses as performance indicators.

iv. ***Human Resource Management*** - The existing human resource capacity was assessed including the recruitment and staffing procedures and compensation packages. The performance management system was also assessed to determine its contribution to staff development.

v. ***Financial and Material Resource Management*** - Current procedures for the management of finances was assessed to uncover implications to the functions of the Unit. An assessment was also conducted of inventory, documentation and recording procedures.

vi. ***Stakeholder Partnerships*** - The strength of existing partnerships were assessed including that with Policy makers, donors, media relations and community stakeholders.

vii. ***Knowledge Transfer Mechanisms*** - An assessment of the internal mechanisms for transferring technical data and knowledge. An assessment was also done to ascertain evidence of knowledge transfer among agency partners and community stakeholders.

viii. ***Services and Results*** - The Unit has done extensive research and analyses into earthquake hazards and the use of seismic risk technologies. An assessment was done of the effectiveness and the extent of outreach initiatives.

3.3 Development of a Capacity Strengthening Strategy:

Findings of the capacity assessment used to inform the development of a capacity strengthening strategy that will enhance the existing capacity and sustainability of the Earthquake Unit.

4 LIMITATIONS OF THE CAPACITY ASSESSMENT

4.1 Time Constraints - The time allotted for complete the assignment was insufficient to facilitate a more detailed capacity assessment of the Earthquake Unit.

4.2 Interviews - Only staff that was present on t was interviewed

4.3 Field Observation - field observation was restricted to the offices of the Earthquake Unit. Due to time constraints no site assessment was done for any of the reported installations set up islandwide.

5 SITUATIONAL ANALYSES

5.1 SWOT ANALYSIS

Table 1: Capacity SWOT Analysis of the Earthquake Unit

STRENGTHS	WEAKNESSES
1) Earthquake **Hazard Identification** 2) Regional and international **collaboration** with Academic Institutions 3) **Geospatial data outputs** of earthquake hazards (hazard maps, seismic risk maps, impacts etc) 4) Active **Community Outreach Programmes** (sensitization of schools and agencies) 5) **Strong media relations** (information disseminated nationally on earthquake hazards) 6) **Staff highly respectful** of Unit head and each other 7) Unit budget guaranteed through the University of the West Indies 8) Projects developed and implemented through local, regional and international **stakeholder partnerships**	1) **Low staff complement** and inadequate work space **2) Limited technical staff** 3) **Bottleneck of leadership** and management 4) **Limited knowledge transfer** internally 5) **Limited integration of technical skills** from agency stakeholders 6) **Insufficient budget** to effectively implement operational plan 7) **Inadequate supply of equipment** for data collection and research **8) Poor management of volunteers**
OPPORTUNITIES	**THREATS**
1) **Growth** of internal technical staff 2) Provision of **advanced technology** and equipment for earthquake hazard assessments **3) Increased media coverage** 4) **Relocation** of Office on or off campus 5) Development of a **Volunteer programme** 6) Increased **funding** from donor agencies 7) Expansion of earthquake **public awareness** and education initiatives **8) Revenue generation**	1) **Heavy reliance on donor funding** for data collection, equipment and hazard assessments 2) **Lack of succession planning** and internal knowledge transfer **3) Inadequate technical staff** 4) **Staff turnover rate** (technical staff) 5) **Limited supply** and access to advance equipment

Table 2: Sustainability Factors identified for the Earthquake Unit

Component	Capacity Area	Level of Achievement
Organizational Sustainability	The Unit has internal capacity, networks and reputation to attract and retain qualified staff and adheres to its mission and values	WEAK
	The Unit monitors the effectiveness of its stakeholder partnerships and documents this through reports	WEAK
Financial and Resource Sustainability	The Unit's cash flows is consistently adequate to meet operational requirements	POOR
	The Unit manages its assets to control costs and as appropriate to maximize income for financial viability	WEAK
	The Unit generates credible proposals and concepts and demonstrates the cost effectiveness of its projects	WEAK
	The Unit is supported by a diversified resource base without overdependence on a single funding source	POOR
	The Unit has strategies and mechanisms consistent with its core programme areas which are efficient for generating sustainable income for a portion of its operating costs	POOR
	The Unit's fundraising raising process is integrated with financial administration system and is monitored and adjusted on an ongoing basis	WEAK
	The Unit has adequate qualified staff and systems in place to access and manage and account for resources from diversified donor sources	POOR
Programme Sustainability	Programmes are focused and prioritized to reflect the values and strategic direction of the Unit and advances the mission	WEAK
	The Unit is a recognized leader in its core programme areas	GOOD
	Programmes are designed and implemented equitably, inclusive of those who are most vulnerable and in need of access to programme services	WEAK
	Programmes addresses gender and other equity concerns	POOR
	Increasing numbers of people benefit from initiatives undertaken by the Unit	GOOD

Component	Capacity Area	Level of Achievement
Political Sustainability	The Unit is able to readily mobilize internal and external support for its programmes	WEAK
	The Unit has fostered a loyalty among stakeholders and has a respected public image	GOOD
	The Unit has capacity to produce local evidence of the needs and effectiveness of its programmes and to communicate these to government, donors, private stakeholders and the general public	WEAK

5.2.1 Identity and Governance

The initial step in assessing the Unit's current capacity, involved gaining an appreciation of the organization's mission and values. Key aspects of the mission of the Earthquake Unit indicate that it seeks to:

- Understand earthquake processes
- Advise the society about earthquake hazards
- Encourage earthquake awareness
- Apply mitigation strategies to development

It was found that the daily functions of the Unit do reflect the mission. It was evident however, through research, that the Unit efforts towards these initiatives were not readily known to most communities, despite being a household name. Table 3 in appendix 1 illustrates the guiding checklist used to assess the Unit's identity and governance.

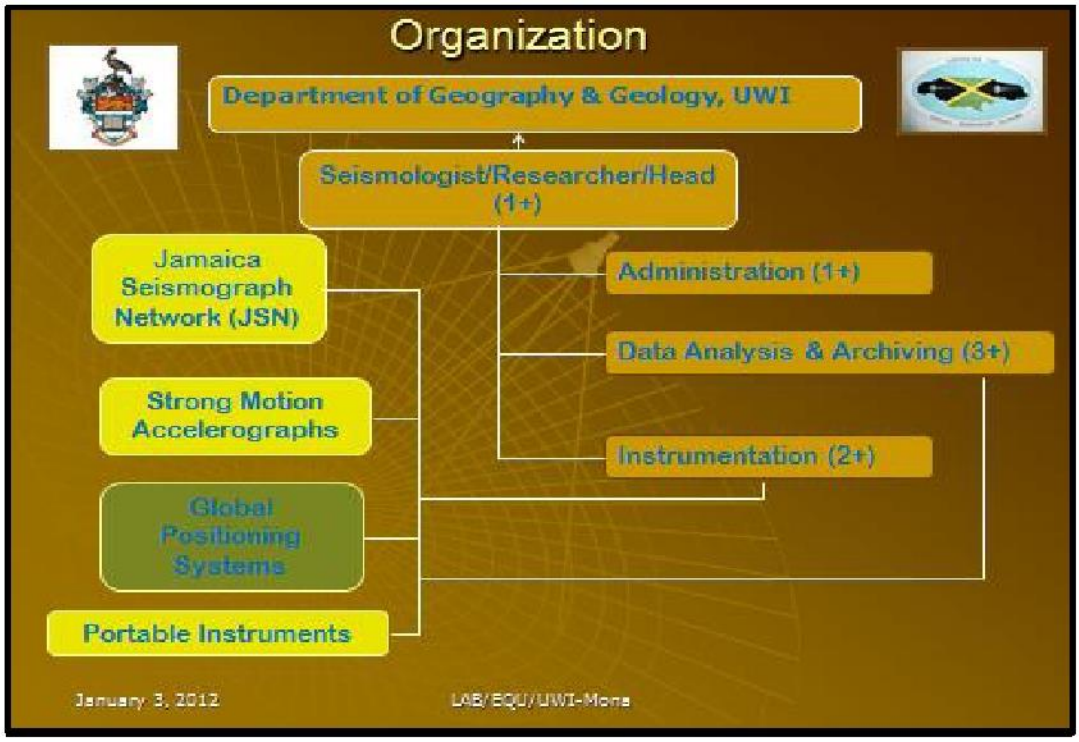
Consultation with a sample of the Unit's staff indicated a general understanding of the organization's mission, vision and values. The staff also expressed that the daily functions of the Unit are in accordance with the mission and vision. (See table 4). These include but are not limited to:

Table 4: Functions of the Earthquake Unit.

BROAD FUNCTIONS OF THE UNIT	***MISSION COMPONENT***
Seismic Hazard Mapping - Collection of seismic microzonation data, assessment of slope deformation due to earthquake induced landslides, vulnerability assessments	Understand earthquake processes
Sensitization of Stakeholders-Presentations conducted to community and agency stakeholders. The Education Sector has also benefited from islandwide earthquake awareness conducted in schools	Advise the society about earthquake hazards
Initiatives through the Global Earthquake Model- Provision of standardized data that can be used to develop regional and international models for seismic assessments.	Encourage earthquake awareness
Maintenance of the Jamaica Seismograph Network (JSN) - Operation of a network of twelve (12) analog short period seismograph stations installed across the island and two (2) broadband seismographs. ***Establishment of the Jamaica Strong Network*** -installation and maintenance of accelerographs across the island used to record ground shaking for earthquakes and structural response. ***Development and Implementation of Projects***- Collaboration with international partners for enhanced research and provision of equipment and expertise.	Apply mitigation strategies to development

The Earthquake Unit is an arm of the UWI that is funded by the Government of Jamaica. The internal governance structure of the Earthquake Unit was not clear or visible through the existing organizational structure depicted in figure 1.

Figure 1: Existing Organizational Structure



The structure emphasizes data management but fails to depict the job positions that are associated with each function. It is therefore difficult to ascertain the interconnectivity among staff roles and responsibilities.

Site observation and staff consultation revealed that most of the staff operates in 'silos' where job functions though interdependent are not shared or understood among each other. It was found that one individual is assigned to each position within the Unit. This increases staff risk and potential staff turnover and restricts knowledge transfer and succession planning. It was also unclear whether team building activities are conducted among the staff, outside of scheduled staff meetings.

5.2.2 Strategy and Planning

The capacity assessment indicated that that the long-term viability of the Earthquake Unit is directly linked to the achievement of the Unit's objectives inside the Strategic and Operational Plans. Discussions with the head of the Unit revealed that components of the Operational Plan are integrated into staff job descriptions and are used to inform decision-making and prioritize activities to be undertaken annually.

Queries about staff performance indicated that the staff is assessed in accordance with the Operational Plan. It was mentioned however that discretion is exercised in the absence of adequate human, material and financial resources for staff to effectively carry out job functions. This somewhat implies that the existing Strategic and Operational Plans are unrealistic or highly optimistic. The Unit's budget is aligned with the Operational Plan. All budgetary allotments are then approved or rejected by the Accounts Executive of the University. It was also found that the there is a heavy reliance on donor funding to support execution of duties outlined in the Strategic and Operational Plan.

To date the internal capacity of the staff is limited. Many of the activities listed inside the Operational Plan are hinged on the availability and access to external technical assistance from partner agencies. It was also unclear whether a monitoring system exists for quantifying and qualifying the achievement of plan objectives. Table 5, appendix 2 highlights strategy and planning variables assessed for the Earthquake Unit.

5.2.3 Management and Reporting

The management structure of the Unit is bottom heavy with all staff reporting to the Unit head instead of an established hierarchy. The head of Unit indicated that greater focus is placed on the management of data processes and systems more so than human resources. As mentioned earlier, there is currently no spatial representation of the reporting hierarchy of the staff. Middle managers such as the Engineer/Network Manager and the GIS Specialist are not equipped with subordinates or support staff. For all technical posts there is only one of each. This is indicative of budgetary constraints for recruitment and lack of sufficient equipment and technologies to facilitate execution of duties.

The reporting mechanism within the Unit is somewhat informal, where the Unit Head receives internal communication directly from each staff member. This communication is conducted mainly via emails and face to face dialogue. The Administrator facilitates and directs most of the external communication. The Unit Head is however responsible for signing off on technical information to be disseminated externally.

The management style of the Unit Head was found to be flexible. It was observed that staff is allowed to independently develop activities for executing tasks outlined in the Operational Plan. Most of the information shared among staff is done electronically via email. There are manual files (books, articles, journals, report) in storage but are used primarily for retrieval of data archives to aid student research.

There is evidence of sound data management within the Unit. Documents are systematically stored and archived for use by internal and external stakeholders, who retrieve and access information from the Unit's library. The current storage capacity of the Unit is inadequate

and the existing library area is small and serves also as a thoroughfare to offices and cubicles. See Plates 1 and 2.

Plates 1 and 2 Earthquake Unit Library

The Unit has recently upgraded to the electronic management of seismic data collection and analyses, through the establishment of the electronic National Data Centre (NDC) located within the Unit that is linked to the wider International Data Centre (IDC) located in Vienna. This data is processed and analyzed jointly with access to earthquake data from the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) International Monitoring System. During daily operations, internal data security is managed by the IT/Electronic Technologist, who quality controls data retrieval and analysis procedures and report findings to the IDC. The head of the Earthquake Unit head is also knowledge about the workings of the electronic NDC but has limited capacity to support maintenance of the equipment. Plates 3 and 4 depict the NDC within the Unit. See table 6 in appendix 3 used to assess management and reporting structure of the Unit.

Plates 3 and 4 Infrastructure of the Electronic Data Centre

5.2.4 Human Resource Management

Human resource management applies a coherent approach to the management of an organizations most valuable assets; the people who individually and collectively contribute to the achievement of the organization's objectives. The Unit is led by a qualified and experienced individual (Research Fellow) and the existing staff is fully committed to the organization's mission toward earthquake disaster risk reduction. Nonetheless, there is a need for additional technical staff to absorb the demand for advanced research of earthquake hazards.

The performance management system, namely PMAS allows staff to monitor their individual progress through their work plan. It was found that the existing staff is assessed using this system, however in the absence of adequate resources, it is impractical to expect optimum delivery of duties. During interviews, some staff members expressed that there is little or no room for upward mobility within the Unit. It was explained that opportunities exist only for parallel movement into technical areas. This would require cross training as each technical area has only one individual assigned. The budgetary constraints also make it difficult for staff to

upgrade their competences through extensive training. To date most of the trainings conducted have been funded through projects and are focused on training that complements the works of the funding source.

The financial constraints have also made it difficult for The Unit head informed that recruitment and compensation procedures of the Unit have been weak due primarily to financial constraints. The Unit head explained that it has been difficult to attract and retain qualified and technical staff. The existing recruitment process though transparent is highly competitive as there are little or no registered vacancies within the Unit. The Human Resources Department of UWI spearheads the recruitment process for the Earthquake Unit in consultation with the Unit head/Research Fellow. It was expressed that there is need for greater use of volunteers who can be trained in technical competences for earthquake hazard identification and analyses and made to operate on a part time basis within the Unit.

The spatial layout of the Earthquake Unit is not conducive to an expansion of its technical base and administrative functions. The current staff is restricted by small cubicles, bordered by heavy equipment mounted on shelves above the cubicle walls that poses a threat to earthquake hazards. See Plates 5 and 6.

Plates 5 and 6: Earthquake equipment poorly stored above occupied cubicle stations.

Site observations revealed high risk of the Unit's working space to fire hazards. A small kitchenette occupies a small room to the rear of the building and has poor ventilation (see Plate 7). The library located left of the entrance/ exit with its high paper content poses a threat to staff as the paper would act as fuel in the event of a fire and potentially block the entrance/exit. See Plates 8.

Plate 7: Small Kitchenette located to the rear of the building

Plate 8: Section of the Library

Throughout the office, there was evidence of loose electrical wiring located in close proximity to work stations and areas where entanglement of limbs is highly probable. See Plates 9 and 10. The staff operates in unsafe conditions on a daily basis. Continued observations during site visit indicate an adhoc assembly of wires to accommodate the increased use of electronic equipment within the Unit. This increases the vulnerability of staff to electrocution and electrical fires.

Plates 9 & 10: Loose electrical wiring at work stations

One positive expressed by staff members regarding the small working space is the ease of rapport and dialogue engaged between staff. They indicated that being close, phone calls are seldom. Further queries revealed that the open floor discussions held are seldom work related. Those of the staff interviewed expressed that they are driven by their passion for earthquake hazard identification and analyses, more so than the incentive of their salary packages. It was found that the current staff turnover rate negatively affects operations of the Unit, as an individual that leaves is usually the sole person conducting a particular job function. This is evident of a lack of succession planning and knowledge transfer. See table 7 in appendix 4 for checklist used to assess human resource management.

5.2.5 Financial and Material Resource Management

All finances and budgets for the Unit are routed through the accounting services of the UWI. As such the Unit cannot make independent decisions for the use of funds, including project funds. Evidence suggests that the Unit complies with all internal and external audit requirements regarding the expenditure of funds and is given some flexibility. The Unit head also informed that regular internal and external financial reports are made available to UWI and/or donors. The Unit however has limited control over the approval of funds for specific deliverables.

An annual budget is drafted by the Unit head and forms part of the justification for components of the Operational Plan. The allocation of funds however, requires approval from UWI and thereby restricts the priority areas of the Unit, such as the purchasing and installation of equipment for data collection and research. It is perceived that the Earthquake Unit and its related functions are low on the priority list for the University, as the budget has recently been cut from $36 million to $25 million per annum. According to Brief Synopsis on the Earthquake Unit (2012) the current budgetary allotment for the period 2012 - 2013 was approved at $29.54 million. This is lower than the required minimum of $36 million. Table 8 in appendix 5 outlines the variables assessed for the financial and material resource management of the Unit.

5.2.6 Stakeholder Partnerships

The Earthquake Unit is renowned among government stakeholders, NGOs and international donors. The work done by the Unit has fostered stakeholder relationships that have influenced the progression of research into earthquake hazards. The integrity of the staff and the credibility of the Unit's work over time have served to strengthen stakeholder partnerships

locally, regionally and internationally. Some partnerships have been formalized through the signing of Memorandum of Understandings (MOUs) for the provision of equipment to conduct research and the supply funding for projects. Matrix 1 indicates some of the key stakeholders of the Earthquake Unit and the nature of the relationships.

Information about current or planned services and activities of the Unit are not consistently made available to its stakeholders on a timely basis. Data sharing has been observed as a constraint between the Unit and its external stakeholders. The Unit head informed that the recently modified electronic NDC houses earthquake data in a manner that is not compatible to most electronic databases found within agencies. As such the Unit has to process the earthquake data and format it for use by local external partners. It was also made known that the Earthquake Unit, is unable to process all datasets stored within the NDC and as such relies on the assistance of the NDC in processing and interpreting some datasets.

Data created and processed within the Earthquake Unit is usually packaged in a manner that meets the demands of target audiences. Community stakeholders however are at a shortfall as the Unit has failed in most regards to simplify technical jargons and images for the benefit of local communities. Earthquake information is disseminated to schools (mainly secondary and tertiary level). It is important to note however that the information about earthquake hazards is sometimes lost in the complexity of the message. The assessment revealed that the Unit quantifies the number of presentations held in schools and the number of children reached, however no evaluation is made of the effectiveness of the outreach initiative.

Donor agencies are highly influential to the success of the Earthquake Unit. Given the limited financial and technical resources available, the dependence on donor funding has

gradually increased. The provision of financial resources is usually project driven which may or may not align with the priorities set the Unit in a given year. The assessment revealed that the current capacity of the Unit to leverage resources from donors both locally and abroad is weak and is reflected in the inability to conduct some activities. It is important to note however that the Unit is highly recognized for the work being done and respected by government and international partners. This admiration has gleaned resources towards earthquake research and analyses. It was also found that most of the equipment purchased and installed throughout the island have been sourced from international partners through the development of projects.

Despite the infrequent occurrence of high magnitude earthquakes, the Earthquake Unit is a household name, though commonly associated with the Office of Disaster Preparedness and Emergency Management (ODPEM). It was observed that as head of the Unit, most information on earthquake related information is communicated via a top down approach, where information from the Unit is fed to the public via the media. The communication channels used mainly by the Unit are technical presentations that offer little room for feedback and interaction to promote a better understanding of technical information. The Unit head informed of the existence of a Public Relations Officer, however to date, the Scientific Officer operates in this capacity. This poses limitations to the use of appropriate reporting mechanisms and language for addressing target audiences, especially the public.

Matrix 1: Key Stakeholders of the Earthquake Unit

Key		Benefits to be derived	Conflicts & Nature of Relationship		
Stakeholders		**Improvements Desired from partnership**	**Key Concerns**		**Implications**
University of the West Indies	Financing of the Unit's Annual Budget	Continued research into earthquake hazards	Increase in budgetary allotment for Operational Plan	Reduction in Annual Budget allotment	The Unit does not manage its own finances and must receive approval from the University
	Implementation of the Seismic Micro-zonation Projects through the DRRC	Improved microzonation of Kingston and other urban centres; Assessment of earthquake vulnerability	Increase in number of data collection points	Failure to complete data collection points in specified project timeline	Prioritization of locations for data collection points and access to these sites; Regular monitoring of the data collection points
Local Universities (UWI, Utech)	Facilitation of students' research and theses by conducting earthquake inefficiencies; limited hazard assessments	Increased awareness of earthquake hazards and earthquake risk reduction	Adoption and implementation of recommendations made in research and thesis papers	Availability of data and equipment to support research	Increased exposure of the Unit' staff to support student research
Regional & International Universities	Funding and research collaboration Members of the International Seismological Centre (Journal)	Installation of GPS units, Accelerographs, and other equipment for data collection, participation in local public awareness campaigns	Purchasing of a Chirp Sonar Survey instrument and other motion detection equipment; provision of training for technical staff within the Earthquake Unit and among agency stakeholders	Sustained funding for projects and installations	Evaluation and monitoring of islandwide installations
International Data Centre	Electronic database network for data sharing and storage	Global access to earthquake data and analyses	Enhanced interpretation of seismic risks; Increased availability of data for research	Maintenance of the National Data Centre	Interpretation of earthquake data; Applicability of some earthquake datasets; accuracy of data acquisition
ODPEM	Provision of funding for equipment; partner in national public education and awareness campaigns for earthquake risk reduction; Partnership on	Greater exposure of work being done by the Unit; Access to donor funding; Facilitation of technical capacity building through training; timely	Continued funding of earthquake vulnerability and risk assessments; Contribution to the National Hazard Database; increased training, public education	Availability of technical staff to support the data acquisition and training	Level of priority placed on earthquake hazards for increasing national disaster resilience

Key Stakeholders		Benefits to be derived Improvements Desired from partnership	Conflicts & Nature of Relationship Key Concerns		Implications
	the Caribbean Tsunami	earthquake information	and awareness		
NMIA	Early Warning Programme Purchasing and Installation of accelerographs as part of the Jamaica Strong Motion Network	for early tsunami warning Future purchasing of equipment to reduce earthquake hazard risk	Strengthening of airport infrastructure to withstand earthquake impacts	Willingness of NMIA to maintain contribution towards seismic risk data collection	Maintenance of partnership for earthquake data acquisition; Notification of the public of perceived hazard risks at the airport
TransJamaica Highway	Contractual arrangements to maintain and use data collected from accelerographs	Increased installation of accelerographs along the major thoroughfares (highways, toll roads)	100% coverage of Jamaica's major thoroughfares in the next 3 years	Availability of funds to purchase equipment for installation	Cost and ownership of monitoring and maintenance of all installations
Ministry of Local Govt.	Approve and support the installation of accelerographs on critical infrastructure and buildings islandwide	Increased earthquake risk reduction initiatives at the local level;	Partnership with the ODPEM and SDC to develop Community Based Earthquake Preparedness Programmes	Budgetary allotment to support initiative	Role of responsible Ministry and stakeholders; Costs of conducting community based programmes; Existing capacity of the Parish Councils
KSAC	Partner with the EQU to acquire instruments for installation in 2 of the city's capitals	Increased data collection; Promotion of earthquake awareness	Increased earthquake mitigation by Government and Private Sector; Provision of funding for local initiatives	Placement and security of some equipment	Responsibility for securing installations
LICJ	Geospatial data sharing and	Increased earthquake map outputs; Technical support collection of geotechnical data	Enhanced integration of earthquake data into the National Spatial Database	Compatibility of datasets (conversion of GPS datasets)	Storage capacity of internal servers to in accommodate large and complex earthquake data
MLSS	Collaboration to pilot an automated system for earthquake alerts within seconds of an event	Information to trigger rapid response to areas most affected; integration into national disaster response mechanism of the ODPEM	Reduced casualties and injuries in the event of an earthquake	Location and capacity of responder agencies; Current capacity of critical facilities (mainly health care	Coordination of evacuation routes, transportation and shelter access

Key Stakeholders		Benefits to be derived Improvements Desired from partnership	Conflicts & Nature of Relationship Key Concerns		Implications
CDEMA	EQU conduct presentations at Annual Conferences; data sharing among CARICOM States	Knowledge transfer of earthquake assessment and analysis techniques within the Caribbean	Increased funding of EQU functions and projects	facilities Inadequacy of technical staff and support	Country lead for some projects spearheaded by the Earthquake Unit
Projects (COCONet, PENDING	Execution of activities connected to the EQU Operational Plan	Funding for daily job functions and purchasing of equipment	Additional technical project staff	Project funding restricting project timelines	Timelines not met
International Donors (IDB, World Bank etc)	Provision of funding for local and regional projects and programmes and research	Funding and technical support of projects and research	Increased funds dedicated to research and mapping	Availability of adequate technical staff	Projects written to the benefit of the donors

5.2.7 Knowledge Transfer Mechanisms

The capacity assessment revealed limited knowledge transfer occurring within the Earthquake Unit organizational structure and staff relations. Though each job function is co-dependent on another; the staff seems to operate in silos where they produce work without an appreciation or full understanding of its contribution to the whole. End products are developed, packaged and issued to relevant stakeholders. The end products are usually interpreted by the Unit head, who is most knowledge in the use of geotechnical processes for earthquake hazard risk identification. Interviews conducted with some staff during field observations, indicates a high vulnerability to knowledge gaps among technical staff. Each one is a specialist in their field and there was perceived mechanism for cross-training and awareness building internally.

The head of Unit informed that there is a weakness in the use and analysis of GPS data. Data is collected using the device, but data retrieval and analysis is limited to the GIS Specialist who sometimes requires external assistance. This results in delays of tasks that are highly dependent on the use of GPS data.

Internally, most of the knowledge and expertise about earthquake hazards and geotechnical data analyses resides with the Unit head. The Seismic Analyst and GIS Specialist work closely with the Unit head (Research Fellow) and seemingly benefit from continuous knowledge awareness and capacity training. This benefit is however limited to technical staff.

Information sharing is also fostered through staff meetings and project briefings. Members of staff revealed that cross training[1] is not conducted despite staffs' limited technical capacity. Staff meetings and project briefings that can broaden awareness are also infrequent. It

[1] Training that exposes staff to job functions outside the scope of their existing technical competences and allow for better understanding and appreciation of overall roles and functions of the Unit.

was found that the Unit head is often out on travelling duties and there is usually no assigned individual to assume responsibility of the Unit during his absence. The knowledge and experience of the current head of Unit is invaluable, yet to date there is no evidence of planning for succession of his leadership.

Currently, public awareness campaigns in schools and agencies, promote awareness more than education in the actual use of equipment and tools for data collection and analysis. The Unit has also failed to maximize its use of volunteers. The staff informed that volunteers assist in data collection and analyses but there is no strategy for increasing the volunteer pool. To date volunteers consist only of those who exercise their own initiative and express an interest. This limits the consistency and availability of volunteers with technical competences. It is also evident that there is a greater need for integration of technical staff from partner agencies in conducting research and data collection led by the Earthquake Unit.

Government Agencies such as the ODPEM and National Works Agency (NWA) actively use earthquake data generated by the Earthquake Unit. Private organizations such as the Norman Manley International Airport (NMIA) also use data generated from the Unit to inform decisions. The NMIA has also purchased and installed equipment for enhancing data collection and reducing risk at the airport. It is important to note however that most agency stakeholders do not have the capacity to collect, interpret and analyze earthquake data. It was expressed that limited training is provided by the Earthquake Unit to partner agencies to increase technical capacity in this area. This has proven challenging as the already short staffed Unit is spread thin in trying to meet the demands and needs of its agency stakeholders.

5.2.8 Services and Results[2]

The Earthquake Unit has made a mark on the local, regional and international community regarding earthquake hazard identification, analysis and awareness. With its current staff complement[3] of seven (7), the Unit is responsible for the establishment of seismic networks for data collection and has developed several outputs since its inception including hazard maps, fault maps, digital earthquake modeling to name a few. Table 10 outlines some of the services offered by the Unit and the results achieved thereof.

Table 10: Services offered by the Earthquake Unit

Service	Activity	Target/ Coverage	Results to Date
Hazard Mapping	Chirp Sonar Survey - mapping of fault offset, tsunami evidence, submarine landslides	Islandwide	Survey completed for Kingston Harbour
	Mapping and dating of earthquake induced landslides	Islandwide	Several slopes in the KMA mapped to inform urban planning
	Develop Seismic Hazard Maps	Islandwide	Partnership with Seismic Research Centre, UWI, St. Augustine through the Disaster Risk Reduction Centre UWI Mona (World Bank Funded Project)
	Seismic microzonation data collection	Islandwide	Seismic microzonation data has been collected across 168 points across the KMA
Earthquake Modeling	Supply the Global Earthquake Model with regional earthquake modeling data	Caribbean	Ongoing
	Seismic Hazard Assessment of Historical and Critical Infrastructure	Islandwide	Ongoing
Academic Research	collaboration institutions through access to equipment and other expertise for earthquake research Facilitate research conducted by students	Academic Institutions	Collaboration with 9 universities 6 Student research theses currently underway

[2] See table 9 in appendix 8. See also appendix 10 for photographs depicting equipment and instruments.
[3] See appendix 9 for list of job positions within the Earthquake Unit

Service	Activity	Target/ Coverage	Results to Date
Seismic Networks	Jamaica Strong Motion Network[4]	Islandwide	8 accelerographs installed
		Islandwide	12 Seismographs
	GPS network[5]	Islandwide	36 GPS stations installed
Data Management	Operates and maintains the National Data Centre	Stakeholders (Agencies & Institutions)	Ongoing
Earthquake Alerting System[6]	Installation of automated alerting system for rapid response	Islandwide	Pilot being developed
Data Transfer	Exchange earthquake data and network metadata with international and regional networks	Regional & International	Ongoing
Training	Training of volunteers in data collection and use of technical equipment	General public	Ongoing
	Training of technical staff and project teams	Agency Stakeholders	Ongoing
Stakeholder Sensitization and Awareness Building	Conduct presentations on earthquake safety and risk	Schools (mainly secondary and tertiary level), agencies (Govt.	Presentations conducted in schools across the island at the primary, secondary and tertiary levels
	Conduct Sensitization Meetings	and NGOs) Communities	To be determined
Research Papers and Publications	Provision of earthquake hazard and risk analyses to local and internal journals, media publications	islandwide Islandwide, regional and international	Technical report recently developed for Annotto Bay, St. Mary Recent publication (2012) in the Geophysical International Journal

[4]Used to capture and transmit ground motion in and around Jamaica to the Central Recording Station at the Earthquake Unit at UWI, Mona.

[5] Monitors fault movement or strain accumulation over time

[6]System will provide earthquake alerts within seconds of an event occurring, and ground shake maps within minutes after the event

6 PROPOSED CAPACITY STRENGTHENING STRATEGY

Matrix 2: Proposed Capacity Strengthening Strategy

Sustainability Factor	Capacity Issue	Recommendation	Actions to be Taken	Responsibility/ Support	Resources Required	Expected Timeframe	Estimated Cost
Identity &	Public perception of the Earthquake Unit	Inform the public about the role of the Unit	Conduct sensitization meetings among stakeholders	Earthquake Unit/UWI/ International Donors	Funding	Ongoing	To be determined
			Increase engagement with public media	Earthquake Unit/ Partner agencies	Research evidence on earthquake hazards	Ongoing	N/A
		Promote the diversity of the Unit	Create tangible outputs that can support works of multiple sectors	Earthquake Unit/Local and International Universities/ International Donors	-Geospatial Software (GIS) -Instruments and equipment for data collection and analyses	Ongoing	To be determined
	Lack of internal awareness of correlating job functions	Promote knowledge transfer of technical skills among staff	Conduct task swapping among staff as part of capacity building	Earthquake Unit (Unit head to authorize)	- Internal workplans -Project activities for designation	Quarterly	N/A
			Staff members to present reports during staff meetings to build awareness	All staff	Monthly Reports	Monthly	N/A
		Develop initiatives that strengthen staff relations	Adopt best practices from similar	Earthquake Unit (All staff)	Research evidence from similar	Ongoing	N/A

Sustainability Factor	Capacity Issue	Recommendation	Actions to be Taken	Responsibility/ Support	Resources Required	Expected Timeframe	Estimated Cost
			organizations (regional and international)		organizations		
			Acquire feedback on suitable initiatives	Earthquake Unit (Head of Unit)	Evaluation templates	Ongoing	N/A
	Limitations to achieving the Unit's mandate	Incremental execution of tasks that directly address the mandate	Prioritization of functions in accordance with mission on an annual basis	Earthquake Unit	-Strategic and Operational Plans -Proposed budget allotment -Annual Reports	Ongoing	N/A
Strategy & Planning	Completion of Annual Operational Plan	Draft Priority Action Plan	Consult with staff on proposed priority actions	Earthquake Unit (led by Unit head) -UWI to review		Quarterly	N/A
			Outline activities to be conducted	Earthquake Unit	-Strategic and Operational Plans -Annual Reports	Quarterly	N/A
Management & Reporting	Unstructured Reporting Mechanism	Establish Communication Flow and Network	Develop an internal 'Call Out' Tree	Earthquake Unit	Staff contact information	Ongoing	N/A
			Maintain an electronic inventory of updated contact information to agency partners	Earthquake Unit (Administrator/ITC)	Software for database creation	Ongoing	To be determined
		Develop an external Notification Flow chart	Acquire up-to-date emergency contact information for emergency responders	Earthquake Unit /ODPEM/UWI/	Contact information	First Quarter	N/A
	Weak	Revise existing	Create a threshold	Consultant/UWI/	Funding	First Quarter	N/A

Sustainability Factor	Capacity Issue	Recommendation	Actions to be Taken	Responsibility/ Support	Resources Required	Expected Timeframe	Estimated Cost
	Management Structure	organizational structure	for subordinates to report to middle management	Earthquake Unit			
Human Resource Management	Low staff complement	Increase technical staff complement in the short term	Recruit additional staff	Earthquake Unit (Unit head to authorize)	-Increased budget for salary packages	Ongoing	To be determined
		Develop strategy for incorporating external technical support	Consult with partnering agencies to develop strategy for accessing external technical resources	Earthquake Unit/UWI/NWA/ MGD/ODPEM/Trans-Jamaica/KSAC	Signed MOUs	To be determined	To be determined
	Technical Competency of Staff	Enhance and upgrade technical competences of internal staff	Conduct training needs assessment	Consultant/ Earthquake Unit	Funding (consultant)	First Quarter	To be determined
			Provision of Cross Training internally (understudy technical posts cyclically)	Earthquake Unit	Temporary staff *(part-time students/ recent graduates/ volunteers)*	Ongoing	To be determined
	No Successor for the Unit Head	Implement Succession Planning	Provision of Leadership Training for middle managers	Earthquake Unit/ UWI/ODPEM/International Donors	-Training Material -Qualified Instructors -Funding	Ongoing	To be determined
	Poor Coordinator of Volunteers	Establish Volunteer Programme	Conduct Volunteer Needs Assessment (include technical requirements)	Consultant/ Earthquake Unit	-Existing record of volunteer support -	First Quarter	N/A
			Creation and maintenance of electronic volunteer database	Earthquake Unit *(Administrator, IT/Electronic Technologist)*/	-Software for database creation -Listing of	Ongoing	To be determined

Sustainability Factor	Capacity Issue	Recommendation	Actions to be Taken	Responsibility/ Support	Resources Required	Expected Timeframe	Estimated Cost
				ODPEM	volunteers		
		Activate the use of volunteers	Develop Action Plans linked to Operational Plan	-Earthquake Unit/ Technical agencies (Govt./ NGOs)	Volunteers	Ongoing	N/A
	Inadequate Work Space (size & layout)	Relocation of Office/ Relocation of some divisions within the Unit	Identification of suitable building on or off campus	UWI *(Engineer)*/ Earthquake Unit/ Consultant	Proposed spatial plan design	To be determined	To be determined
			Transition relocation of staff	Earthquake Unit/UWI	-Haulers -Additional office furniture -Advanced technology and equipment	To be determined	To be determined
	Staff Performance	Enhance staff performance	Establish incentive package for high performers	Earthquake Unit/UWI/International Donors	Funding	Ongoing	To be determined
			Conduct Annual PMAS	Earthquake Unit *(Unit Head)*/ UWI *(Human Resources)*	PMAS Template	Annually	N/A
Financial & Material Resource Management	Inadequacy of Budget	Develop justification for budget increase	Itemize required budgetary allotment for priority actions	Earthquake Unit/ Donor agencies (local & international)	-Annual Reports -Proposed projects -Operational Plan	First Quarter	N/A
		Seek alternative funding to support Unit activities and projects	Develop a Funding Model	Consultant/ Earthquake Unit/ International Donors	-Funding *(consultant)* -Sample Models for adoption or adaption -	First Quarter	To be determined
			Develop	Consultant/Earthq	-Record of	First Quarter	N/A

Sustainability Factor	Capacity Issue	Recommendation	Actions to be Taken	Responsibility/ Support	Resources Required	Expected Timeframe	Estimated Cost
			comprehensive strategy for revenue generation	uake Unit	current income generation		
	Finances controlled by UWI	Establish Accounts Department within the Earthquake Unit	Develop and submit proposal to Board members and Advisory Committee for approval	Earthquake Unit	N/A	First Quarter	N/A
			Recruit accounting staff	UWI/ Earthquake Unit	Budget for salaries	First Quarter	To be determined
	Inadequate storage and maintenance of material resources	Designate secure storage for equipment	Create and maintain electronic inventory of all equipment stored internally	Earthquake Unit *(IT/Electronic Technologist)*	Software for database creation	Ongoing	To be determined
			Provision of suitable internal/external storage area for equipment	Earthquake Unit/ UWI	Storage facility/area	First Quarter	To be determined
		Maintenance of equipment and material resources	Schedule regular maintenance of all equipment *(including hardware & software)*	Earthquake Unit/UWI/Consultant	Duty Roster Funding	Monthly/ Quarterly	To be determined
			Establish and maintain equipment & Infrastructure connectivity	Consultant/ Agency partners/ Earthquake Unit	Funding	Ongoing	To be determined

Sustainability Factor	Capacity Issue	Recommendation	Actions to be Taken	Responsibility/ Support	Resources Required	Expected Timeframe	Estimated Cost
	Storage capacity of internal servers to accommodate large and complex earthquake data	Store electronic data on offshore servers	Identify stakeholder partners to store data	Earthquake Unit	Inland and offshore Servers	First Quarter	To be determined
Stakeholder Partnerships	Failure to complete data collection points (seismic-microzonation projects) in specified project timeline	Prioritization of locations for data collection points	Identify suitable locations to install data collection points	Earthquake Unit	GPS equipment	Ongoing	To be determined
			Partner with stakeholders to assess and monitor data collection points	Earthquake Unit	Volunteers	Ongoing	N/A
		Conduct regular monitoring of the data collection points	Establish stakeholder partnerships to assess data collection points and analyze data	Earthquake Unit/ Partner Agencies	Monitoring and evaluation instruments	Ongoing	To be determined
	Availability of data and equipment to support research	Source financial and human resources to support earthquake research	Engage research students as volunteers for data collection	Earthquake Unit	Volunteers (students)	Ongoing	N/A
	Sustained funding of projects and installations	Source funding from donor agencies and NGOs	Write proposals to donor agencies and NGOs	EQU/ Consultant	Funding	Ongoing	To be determined

Sustainability Factor	Capacity Issue	Recommendation	Actions to be Taken	Responsibility/ Support	Resources Required	Expected Timeframe	Estimated Cost
	Current capacity of critical facilities (mainly health care facilities)	Data collection of structural stability of critical facilities	Installation of accelerometers	EQU/ Partners	Funding Equipment	Ongoing	To be determined
	Cost and ownership of monitoring and maintenance of all installations	Seek sponsorship for the purchasing of equipment	Target donors for funding	EQU	Funding	Ongoing	To be determined
	Community Engagement	Strengthen local community presence and involvement	Establish Community Based Earthquake Risk Reduction Projects	EQU/ODPEM	Funding	Ongoing	To be determined
			Conduct regular community sensitization meetings and workshops	EQU/ODPEM/ SDC/Partners	-Training material -Qualified Instructors -Venue and refreshments	Ongoing	To be determined
			Attend the Parish Disaster Committee Meetings	EQU/ODPEM (Regional Coordinators)/ Parish Councils	Meeting Agenda	Quarterly	N/A
			Conduct presentations to agency stakeholders (national & local level)	EQU	-Qualified Presenters	Ongoing	To be determined
			Indulge communities as part of volunteer programme to	EQU/SDC/ ODPEM	Volunteers	Ongoing	N/A

Sustainability Factor	Capacity Issue	Recommendation	Actions to be Taken	Responsibility/ Support	Resources Required	Expected Timeframe	Estimated Cost
			support the Unit				
	Partnerships with community groups	Establish partnerships with Community Based Organizations (CBOs)	Identify and engage existing CBOs	EQU/ODPEM/ SDC	Records of established CBOs	Ongoing	To be determined
	Heavy reliance on Donor Funding	Develop revenue generation system	Assess the current income generating activities being undertaken	EQU/ Consultant	N/A	First Quarter	To be determined
			Develop an electronic database for tracking revenue	Consultant	Funding	First Quarter	To be determined
Knowledge Transfer Mechanisms	Weak Internal Knowledge Transfer	Establish mechanism for internal knowledge sharing	Technical staff to understudy each other's tasks	EQU	N/A	Ongoing	N/A
		Conduct knowledge transfer to technical agency partners	Conduct training workshops and indulge agency partners in data collection processes	EQU/Donor Agencies	Funding	Ongoing	To be determined
	Insufficient Training at Community Level	Develop community training programmes	Partner with agency stakeholders to develop training programmes	EQU/ODPEM/ SDC	Funding	Ongoing	To be determined
Services & Results	Effectiveness of Outreach Programmes	Develop programmes for expanding the work of the Unit	Partner with donor for provision of equipment	EQU	Funding	Ongoing	To be determined

Sustainability Factor	Capacity Issue	Recommendation	Actions to be Taken	Responsibility/ Support	Resources Required	Expected Timeframe	Estimated Cost
	Quantity of Research	Increase staff complement and volunteers	Partner with agency stakeholders to conduct research	EQU	Funding	Ongoing	To be determined
	Availability and use of advanced technology	Acquire upgraded equipment and tools	Seek donor funding to purchase equipment and tools	EQU/Donor Agency	Funding	Ongoing	To be determined
	Media Relations	Increase media coverage of works being done by the Unit	Invite the media to workshops, trainings and project based field activities	EQU	Funding	Ongoing	To be determined

7 MONITORING AND EVALUATION

The following Action Plan Monitoring Report template can be used to monitor and evaluate the progress of the Earthquake Unit following each capacity assessment.

Action Plan Review Date:

Participants:

Introduction

(No more than one page, describing the event, its objectives and main results.)

Progress made since last organizational capacity assessment

(Describe progress made against the last action plan in one or more of the nine capacity areas based on the indicators. List obstacles faced and new opportunities)

Areas that need work

(Describe the needs identified and summarize the discussion points by the capacity areas discussed. Describe new actions to be conducted to move implementation of action plan forward)

Follow-up

(Describe steps to further institutionalize regular organizational capacity assessment, to integrate action plan into annual implementation plan supporting the strategic plan.)

Attachments

(A copy of last action plan, revised action plan, etc.)

8 APPENDICES

Appendix 1: Identity and Governance

Component	Capacity Area	RATING
Mission, Vision and Values	Mission and vision are clear and specific and reflects organization values	GOOD
	Staff are able to effectively explain the organization's mission, vision and principles to partners and external stakeholders	WEAK
Organizational Structure and Culture	Organization's culture reflects the mission and vision	GOOD
	Organization promotes a no discriminating working environment	GOOD
	Organization structure supports mission, vision and values	WEAK
	Organization chart clearly shows reporting levels and communication channels	WEAK
	Positions in the organizational structure reflects/represents the staffing requirements	WEAK

Appendix 2: Strategy and Planning

Component	Capacity Area	Level of Achievement
Strategic Planning	Relevant data from internal and external sources are used to systematically support and improve planning for the unit.	GOOD
	Planning process includes participatory decision making for priority setting and resource allocation	WEAK
	Responsibility for the planning is included in job descriptions and staff performance appraisal system	GOOD
	Strategy reflects the mission, vision and values of the organization	GOOD
	The Unit has internal expertise or the capacity to efficiently use external expertise to guide strategic planning	WEAK
	Timeframes for achieving strategic goals and objectives are clearly established and achievable	WEAK
	Management uses the strategy to make decisions	GOOD
	Initiatives are developed and implemented in accordance with the Unit's Strategic Plan	GOOD
Operations Plan	Operational Plans are developed and used to inform budget preparation	GOOD
	Operational Plans are detailed and implementable within a specified timeframe	WEAK
	Operational Plans indicate the human, financial and material resources needed to achieve objectives	GOOD
	Staff performance and deliverables are linked to the operational plan	GOOD

Component	Capacity Area	Level of Achievement
Monitoring	The Unit has monitoring systems for the strategic and operational plans that report on and communicate progress towards achievement of the plans' objectives to staff and stakeholders	WEAK
	Leadership periodically engages staff to critically reflect on the objectives of the strategic and operational plans	GOOD

Appendix 3: Management and Reporting

Component	Capacity Area	Level of Achievement
Management	Management ensures the Unit has a sufficient number of staff with relevant qualifications and experience	POOR
Information Management	Documents are systematically filed and archived according to document procedures and made available to concerned parties	GOOD
Team Relationships	There is mutual respect, trust and cooperation among staff at all levels within the Unit	GOOD
	Scheduled team building activities enable open team communication and collaboration and promote staff morale	POOR
	Management provides the human, material and financial resources to support and reward approved change initiatives	WEAK
Risk Management	Internal controls and mechanisms are in place for periodic reviews to ensure compliance and reduce risk	WEAK
	Internal controls and risk management responsibilities are assigned to relevant staff	WEAK
	Organization has controls in place to limit or reduce spending in the event of revenue shortfall	WEAK

Appendix 4: Human Resource Management

Component	Capacity Area	Level of Achievement
Human Resource Capacity	The Unit has adequate number and quality of staff to successfully complete tasks and programmes for achieving mission	POOR
	The Unit is able to attract and retain qualified staff to achieve its goals	POOR
	Staff is fully committed to the Unit's mission and vision	GOOD
	Staff feels the Unit provides a safe and healthy working environment	WEAK
	The Unit has the human resources capacity to create innovative and effective programs that meet stakeholder needs	POOR
Management	The Unit's staff is led by a qualified and experienced	GOOD

Component	Capacity Area	Level of Achievement
Systems	individual	
	The Unit dedicates qualified staff to manage each of its major operational units	WEAK
Recruitment and Staffing	The recruitment process is documented, transparent and competitive	WEAK
	The Unit provides staff with adequate resources to do their work	POOR
Compensation and Benefits	Salaries and benefits are based on the Unit's mission and principles	WEAK
Performance Management Systems	Staff works with supervisors to set their work plans that represent their responsibilities	GOOD
	Work performance goals are challenging and provide opportunity for staff to demonstrate initiative and creativity	WEAK
Staff Development	All staff feel they have a fair opportunity for promotion	WEAK
	Internal and external opportunities to upgrade skills are available to all staff	POOR
	The Unit has a budget for staff development and training	WEAK

Appendix 5: Financial and Material Resource Management

Component	Capacity Area	Level of Achievement
Financial System	Accounting cycles and periods are defined and closing procedures are followed	GOOD
Financial Reporting	The Unit has formal procedures for recording cash receipts and disbursements and conducted documentation of such transactions	WEAK
	The Unit has an expenditure authorization chart that shows commitments and disbursements	POOR
	The Unit complies with all external audit requirements	GOOD
	Regular internal and external financial reporting is made available to management and donors in accordance with established deadlines	GOOD
Inventory and Receivables Management	The Unit conducts documentation that specifies storage and record keeping requirements for all inventory items	GOOD
	All goods including commodities received or purchased by the Unit are properly maintained or secure in appropriate storage facility	WEAK
	Inventory reporting has an audit trail that enables review to trace all reported inventory activity	GOOD
	The Unit's equipment are secured at all times	WEAK
	The Unit maintains records to support its property and	GOOD

Component	Capacity Area	Level of Achievement
	equipment acquisitions and disposal	
	The purchase, use, storage and disposal of equipment donated or funded by donors is performed in compliance with donor requirements where applicable	GOOD
Budgeting	Unit Head participated in a budgting process that is integral to the Operational Plan	GOOD
	The Annual Budget shows approved projected revenues and expenses	GOOD
	Allocation in the budgeting process closely reflects the Unit's priorities	WEAK

Appendix 6: Stakeholder Partnerships

Component	Capacity Area	Level of Achievement
Relations with Policy Makers	The Unit strengthens its relationships with government without compromising its integrity and independence	GOOD
	The Unit possesses communication, information sharing and dissemination strategies to inform and influence policies	WEAK
Partnerships	The Unit has written agreements for some of its partnerships that help to define and foster trust and cooperation	GOOD
	Information about current or planned services, activities and results are routinely shared with beneficiary communities and stakeholders	WEAK
Relations with Donors	The Unit is successful in leveraging resources from the government and donors for itself, its partners and communities	WEAK
	The Unit is recognized and respected by international and local donors, government officials and civil society	GOOD
Public Relations	The Unit has a public relations strategy, which is used and regularly monitored and evaluated	WEAK
	The individual responsible for public relations has the necessary qualifications for that purpose	WEAK

Appendix 7: Knowledge Transfer

Component	Capacity Area	Level of Achievement
Unit Learning Strategy	Managers allocate human, material and financial resources to support the organizational learning strategy	WEAK
	There is a reward system recognizes staff that exercise innovation and share knowledge and experience	WEAK
Documentation and Knowledge Sharing	Staff actively manages the knowledge base by creating products, collecting external information and maintaining up-to- date information	GOOD
	Documentation of knowledge is in formats that present information most relevant to and easily understood by target audiences	WEAK
	All staff easily access and add to the knowledge base of the Unit regardless of rank or position	WEAK
	The Unit stores ad shares technologies appropriate to location and users	WEAK
	The Unit has processes and tools that help staff connect with each other and provide assistance	WEAK
	Staff share and collaborate with external stakeholders to exchange information, discuss challenges and develop best practices and innovations	WEAK
	The Unit actively participates in networks with stakeholders to jointly develop sector-wide best practices	GOOD

Appendix 8: Services and Results

Component	Capacity Area	Level of Achievement
Sectoral Expertise	The Unit maintains an adequate staffing base of sectoral experts	POOR
	The Unit is able to quickly access external temporary consultants to provide technical services	POOR
	The Unit is recognized publicly for providing quality products and/or services to stakeholders	GOOD
	The Unit is capable of adapting project and service delivery to the change needs of stakeholders	WEAK
Project Stakeholder Engagement	There is a standardized participatory process for conducting stakeholder analyses for projects	WEAK
	Primary stakeholders are satisfied with the Unit's services, projects and programmes	GOOD
	Project staff (including Unit) engages stakeholders to design, improve and modify the planning and implementation process	GOOD
	The Unit collaborates with stakeholders to optimize use of available resources	GOOD
Community Participation	The Unit proactively uses community feedback in all phases of project development and management	WEAK

Component	Capacity Area	Level of Achievement
	Projects routinely build on local knowledge and best practices	WEAK
Programme Development	Staff-designed and implemented projects support the mission, strategy and principles of the Unit	GOOD
	The Unit uses participatory approaches and a sustainability strategy across projects to enhance community ownership	POOR
	The Unit documents and enforces standards to ensure that projects do not bring harm to target areas	GOOD
	The Unit provides sound natural resource management during interventions (especially those that include extensive field studies)	GOOD
Project Design and Implementation	Staff submits responsive and timely Concept Notes and Proposals to donors	GOOD
	The Unit tracks progress against impact indicators	GOOD
Monitoring and Evaluation	The Unit has well designed monitoring and evaluation systems that deliver clear quantitative and qualitative information and analyses	WEAK
	Management systematically monitors, evaluates and reports on projects	WEAK
	The Unit uses information gathered from evaluations to develop more sustainable projects	GOOD
	The Unit measures gender related impacts of interventions	WEAK
	The Unit measures the service quality it provides	WEAK
	Services provided generally reach the intended participants	GOOD
	The Unit collects and uses feedback from project participants on service quality to improve services	WEAK

Appendix 9: Job Positions within the Earthquake Unit

- Unit Head (Research Fellow)
- Engineer/ Network Manager
- IT/Electronic Technologist
- GIS Specialist
- Seismic Analyst
- Administrator
- Scientific Officer
- Education and Information Officer

Appendix 10: Earthquake Equipment and Instruments

Global Positioning System (GPS) measuring aseismic strain accumulation at Pedro Cay

Seismograph station NEJ at Negril, Westmoreland

Seismograph station YHJ at Yallahs, St. Thomas

Antennas and solar panels at station PCJ - Portland Cottage, Clarendon

Seismograph station GWJ at Greenwich, St. Andrew overlooking Kingston

The solar panels that provide alternate power for the central Recording station at Mona

9 REFERENCES

Guidance was sought from the following reference material to determine the most suitable approach to conducting a capacity assessment of the Earthquake Unit.

Brown Lyndon (2012) Brief Synopsis of Work and Research at the Earthquake Unit, University of the West Indies Mona

Brown Lyndon (2012) Earthquake Unit Annual Report

New South Wales Government (2008) Capacity Toolkit, Attorney General's Department

FAO (2010) Capacity Assessment Approach and Supporting Tools (Discussion Draft)

Catholic Relief Services (2011) Chapter 2; Holistic Organizational Capacity Assessment Instrument (HOCAI)